Supporting Information

Highly sensitive, foldable and wearable pressure sensor based on MXene-coated airlaid paper for electronic skin

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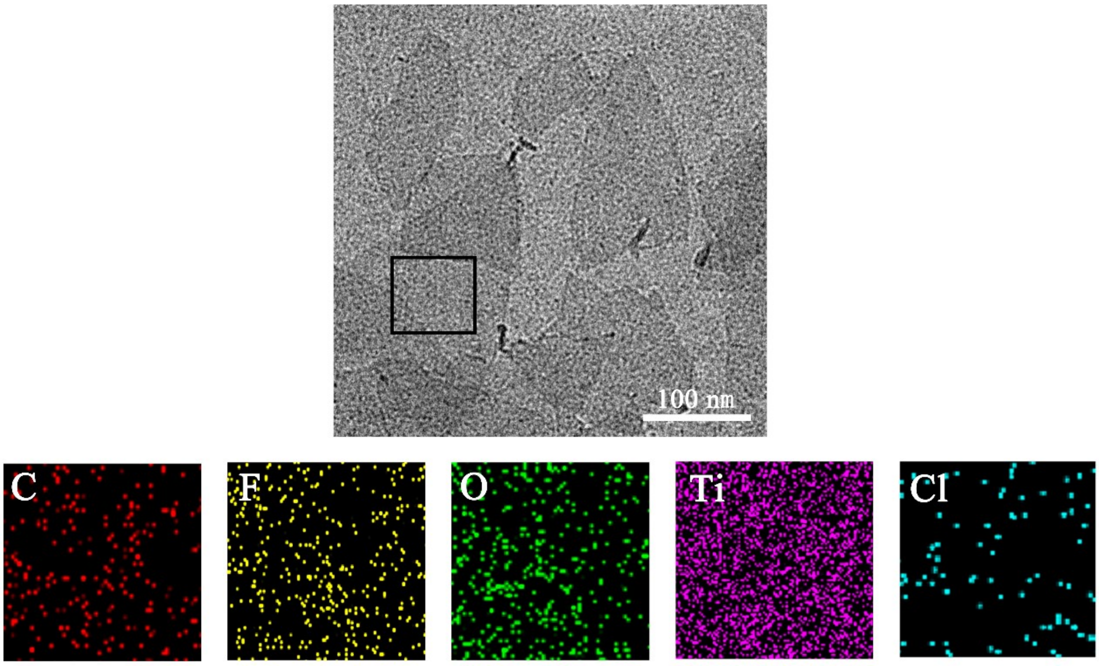

Fig. S1 TEM image along with the EDS elemental mapping of C, F, O, Ti and Cl in selection frame for MXene nanosheets.

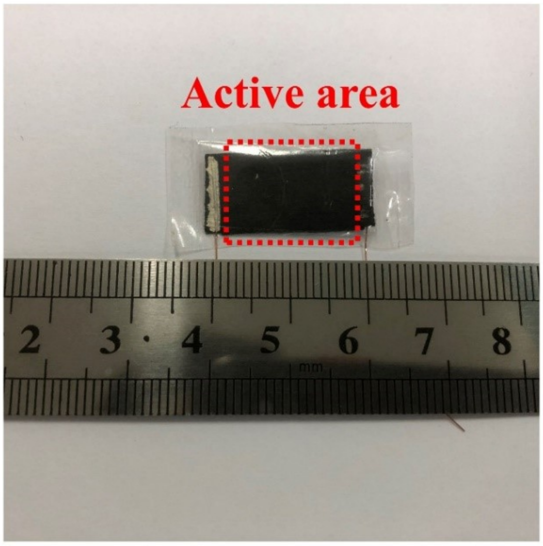

Fig. S2 Digital photograph of the MXene AP pressure sensor encapsulated in the surgical semipermeable polyurethane film.

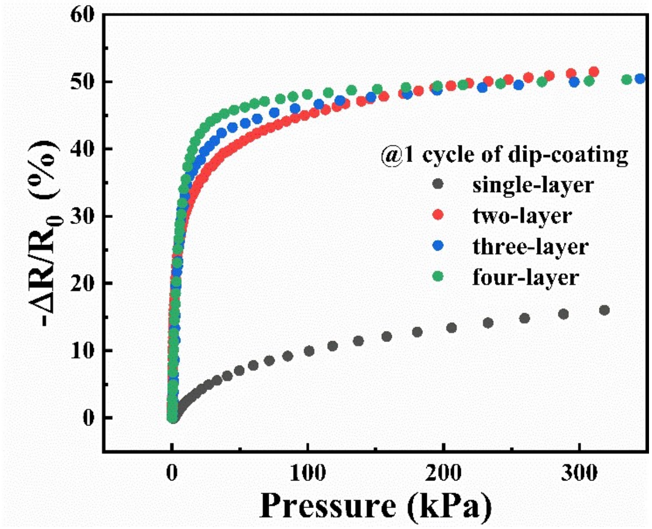

Fig. S3 Relative change in resistance of the single-, two-, three- and four-layer MXene AP sensors under different pressures.

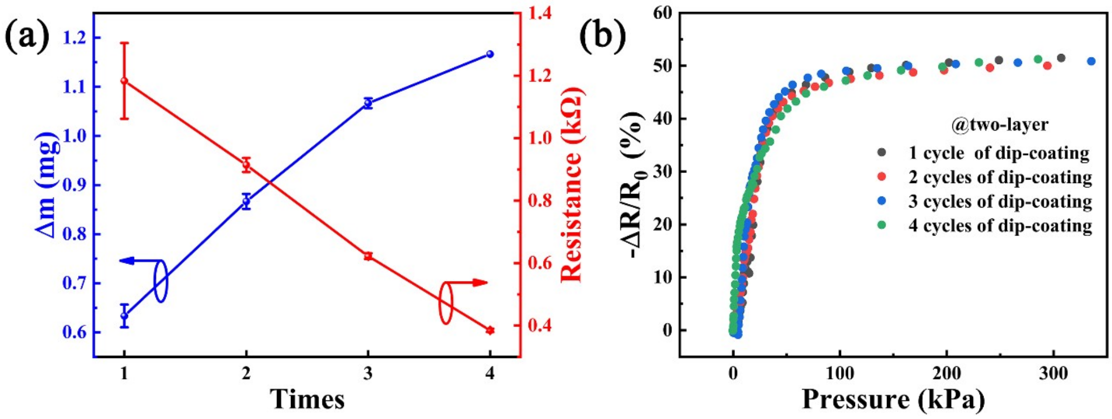

Fig. S4 (a) Variation in mass loading and electrical resistances with 1, 2, 3 and 4 cycles of dip-coating. (b) Relative change in resistance of MXene AP two-layer sensors with different cycles of dip-coatings under different pressures.

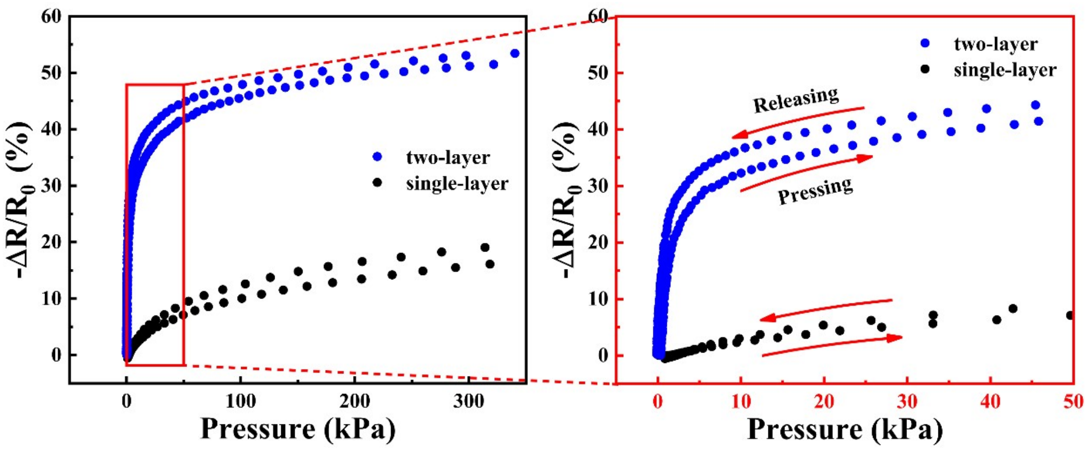

Fig. S5 Relative resistance change of the pressure sensor based on single-layer and two-layer MXene AP fabrics during a continuous pressing and releasing cycle of pressure.

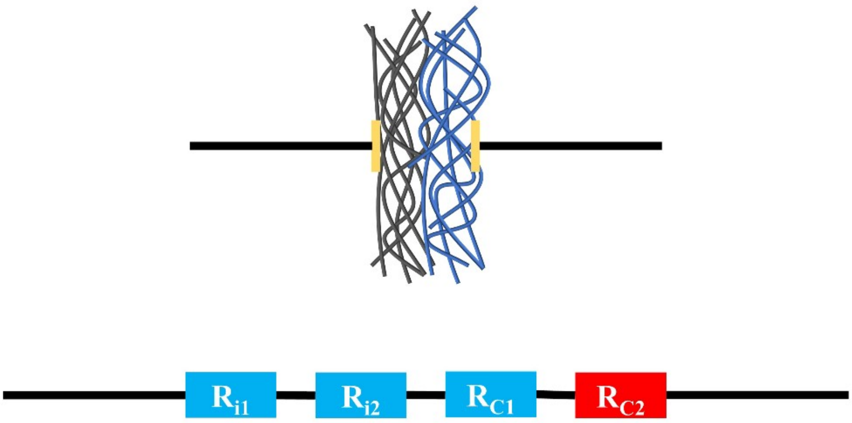

Fig. S6 The equivalent circuit model of the MXene AP pressure sensor. Total resistance of the sensor consists of R_{i1} (the intrinsic resistance of the copper wire electrodes), R_{i2} (the intrinsic resistance of the MXene AP fibers), R_{C1} (the contact resistance between copper electrodes and MXene AP fabric) and R_{C2} (the contact resistance of MXene AP fibers including the single-layer MXene AP structure and between the layers of the MXene AP fabric).

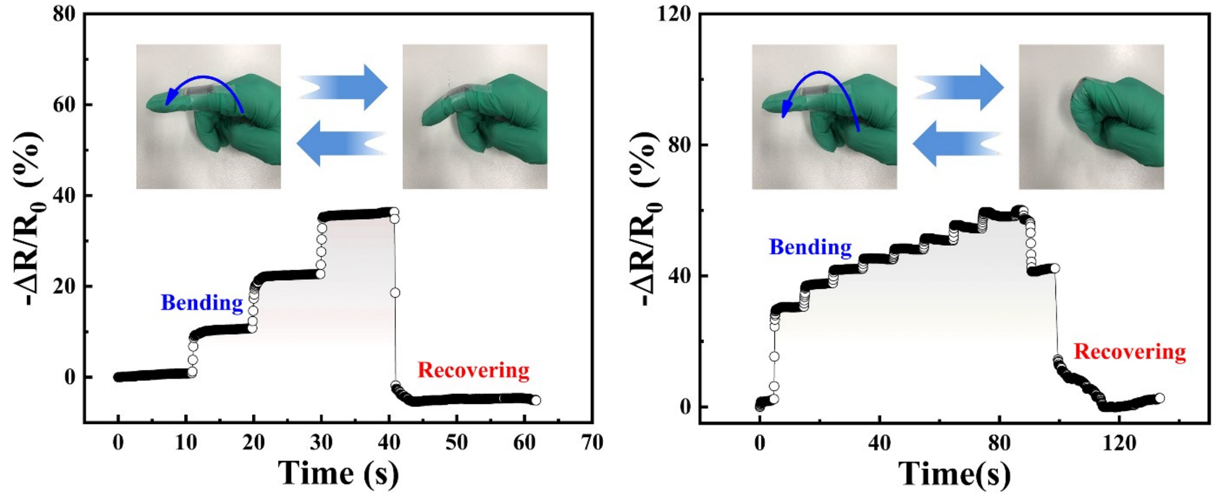

Fig. S7 Resistance sensing signals induced by different degrees of the index finger bending.

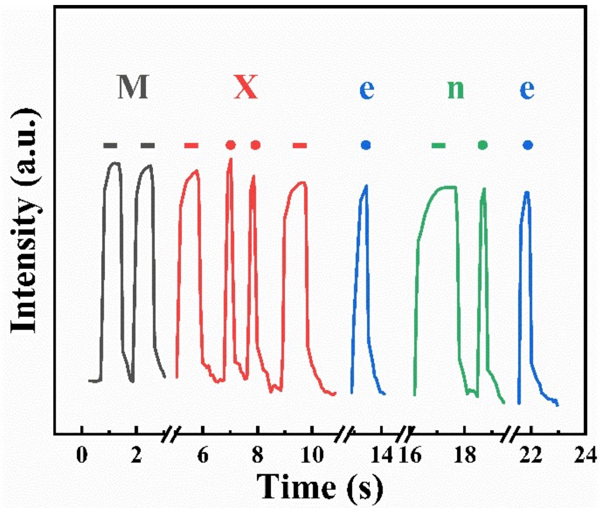

Fig. S8 Morse code for “MXene” produced by touching the sensor.

Table S1 Comparison of piezoresistive pressure sensors based on various materials.

Materials	Sensitivity (kPa^{-1})	Sensing range (kPa)	Reference
MXene/cotton fabric	5.30 (0-1.30 kPa), 2.27 (1.30-10.25 kPa), 0.57 (10.25-40.73 kPa), 0.08 (40.73-160 kPa)	160	[37]
AgNWs/tissue	1.5 (0.03-30.247 kPa)	30.247	[50]
rGO-coated flexible wood	1.85 (0-60 kPa), 0.7(60-~120 kPa)	~120	[51]
Janus graphene film	0.736 (0-1 kPa) 0.005 (1-100 kPa)	100	[52]
graphene-textile	0.23 (0-140 kPa)	140	[53]
3D honeycomb-like graphene network	3.54 (0-8 kPa) 1.88 (8-50 kPa) 0.32 (50-150 kPa)	150	[54]
graphene-paper	17.2 (0-2 kPa) 0.012 (2-20 kPa)	20	[55]
melamine foam/ conductive graphite flakes	7.58 (0-5 kPa) 8.6 (5-28.9 kPa)	28.9	[56]

MXene/chitosan/PU sponge	0.014 (0-6.5 kPa), -0.015 (6.5-85.1 kPa), -0.001 (85.1-245.7kPa)	245.7	[57]
MXene@AP	7.65 (0-3.3 kPa) 0.98 (3.3-12.2 kPa) 0.24 (12.2-48.8 kPa) 0.04 (48.8-300 kPa)	300	This work